

Protective Devices





BASLER ELECTRIC POWER SYSTEM PROTECTION AND CONTROL PRODUCTS

Basler Electric offers an extensive product line for the protection, monitoring, and control of power system generation, transmission, and distribution equipment. Whether your application requirements are for utility grade, multifunction, or discrete protective relays; communication networked integration or automation systems; or for cost-effective industrial grade relays, Basler Electric has the products you need. Protection and Control products from Basler Electric are recognized worldwide for reliability, performance, and quality of design and manufacture. With Basler Electric you can count on the service and support that you expect from an industry-leading, American-owned company with a long-term commitment to excellence.

Our BE1 utility grade products meet or exceed applicable IEEE and IEC standards. For details on specifications and standards, see bulletin SDA and/or each product's individual bulletin. For those whose needs are for high quality, reliable protection but with lower cost and performance requirements, the BE3 product line includes multifunction, numerical relays, as well as solid state, single function, DIN rail or through hole mounted relays and auto synchronizers.

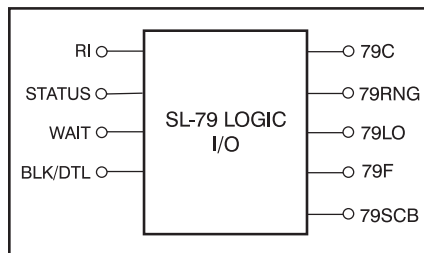
In addition to the products offered in this brochure, Basler Electric is a leading innovator in static excitation systems, generator voltage regulation products, and integrated engine/generator control products. See your Basler Electric Power Products Catalog. To learn more about the in-depth, broad extent of Basler Electric's knowledge and experience in power systems protection, regulation, and control, visit us on line at www.basler.com.

TABLE OF CONTENTS

Section 1	BE1 Numerical Systems	
	• BE1-851	Overcurrent Protection System 2
	• BE1-951	Overcurrent Protection System 3
	• BE1-CDS220	Current Differential Protection System 4
	• BE1-GPS100	Generator Protection System 5
	• BE1-MMS100	Multifunction Metering System 6
	• Software 7
Section 2	Networked Automation Systems 8
Section 3	BE1 Protective Devices (By IEEE function number) 9-15
Section 4	BE3 Protective Devices	
	• BE3-GPR Generator Protective Relay 16
	• BE3 Industrial Grade Relays 17
Section 5	Retrofit Relays 18-20
Section 6	Autosynchronizing Devices 21
Section 7	Accessories 22
Section 8	Fax-back Forms 23-24

1 BE1 NUMERICAL SYSTEMS

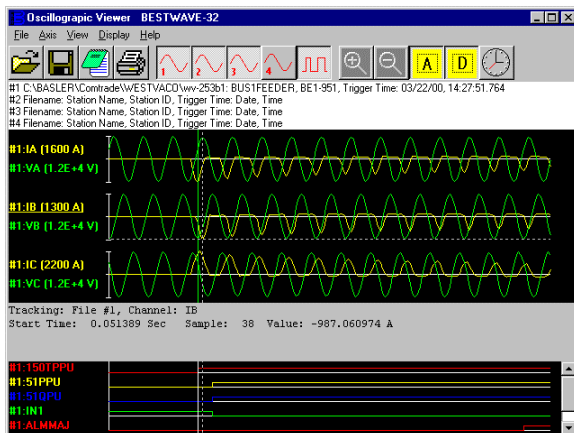
BE1 Numerical Systems provide state of the art protection, metering, and control functions in economical, yet powerful, multifunction devices. Numerical technology enables these intelligent electronic devices to provide all functions required for a zone of protection along with wide ranges, multiple setting groups, multiple coordination curves, and low burden. In addition to this, most BE1 Numerical Systems provide options of both rack mount and retrofit friendly packages to facilitate modernizing protection and control systems in existing facilities.



Typical Function Block

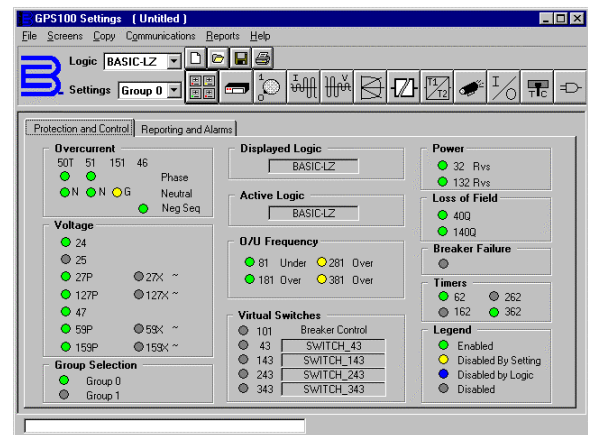
To ease the difficulty of setting up these complex, sophisticated devices, BESTCOMS software is provided free of charge. This point and click tool makes the process of creating settings files easy and intuitive and reduces the learning curve. In addition, the ASCII command interface allows access to the complete functionality of the device without the requirement for proprietary software on your computer.

Extensive reporting and alarm functions are provided to help you monitor equipment, restore systems, improve service, and reduce maintenance. Detailed sequence of events reporting (SER), fault summary reports, and oscillography recording allow detailed analysis of operations to determine the cause of relay operations. Free BESTwave COMTRADE viewer software allows you to open up to four oscillography files simultaneously to aid in event analysis.



BESTwave COMTRADE Viewer

BESTlogic programmable logic provides the user with complete flexibility in configuring a protection and control system. Each of the functions in a BE1 Numerical Systems relay is implemented as an independent function block that is equivalent to its single function, discrete device counterpart. This programmable logic system was designed with users in mind to be immediately familiar to protection engineers and technicians. BESTlogic allows the flexibility to set up these powerful multifunction systems with the same freedom that was once enjoyed with single function, discrete devices. It is no longer necessary to compromise your standard protection and operating practices to deal with the limitations in programmability of previous multifunction devices.



BESTCOMS System Summary Screen

The three independent communications ports along with built in support for Modbus™ and DNP 3.0 provide easy access to integrating the protection, control, metering, status reporting, and monitoring functions into a substation automation system. The standard IIRIG-B port provides time synchronization from a master clock. Remote control is provided by virtual control and selector switches with select before operate logic through programmable outputs.

BE1 Numerical Systems																																		
S = Standard																																		
O = Optional																																		
	24	25	25VM	27P	27-3N	32	40Q	46N	47N	50P/50N	51P/51N	51/27C	51/27R	50Q/51Q	BF	59P	59N	60FL	62	67P	67N	67Q	79	81	87	87ND	Communications	Watt/VAR Metering	Load Profile	Oscillography	Test Paddle	Poly-Phase	50/60Hz	
BE1-851										S	S			O	S	S	S	S	S	S	S	S	S	S				S	S		S	S	S	S
BE1-951	S	O	O	S	O					S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S			S	S	O	S	O	S	S
BE1-CDS220										S	S			S	S				S						S	S			O	S		S	S	S
BE1-GPS100	S	S		S	S	S	S	S	S	S	S	S	S		S	S	S	S	S					S			S	S		S		S	S	S
BE1-MMS100																													O	O		S	S	S



BE1-851

(Request bulletin UHM)

Functional Description

The BE1-851 Overcurrent Protection System is an economical, microprocessor based, multifunction system. It is fully drawout and fits cutout, drilling, and behind-panel projection dimensions for common Basler, GE, and Westinghouse relays. It provides:

- Three phase, ground, and negative sequence overcurrent protection with four shot recloser
- Twenty-four samples per cycle digital signal processing with selectable algorithms
- Breaker failure
- Three drawout case configurations
- Choices are fundamental, RMS, or average sensing algorithms.
- Control and metering functions
- Breaker monitoring
- Programmable LCD display

Application

The BE1-851 Overcurrent Protection System is intended for use in any nondirectional overcurrent protection application. Its unique capabilities make it ideally suited for applications:

- Requiring low burden to extend the linear range of CTs.
- Requiring the flexibility provided by wide setting ranges, multiple setting groups, and multiple coordination curves in one unit.
- Requiring the economy and space savings provided by a multifunction, multiphase unit, while providing all of the protection, local and remote indication, metering, and control functions required on a typical circuit.
- Requiring communication capability.
- Requiring specific current response characteristics.
- Where optional case configurations facilitate modernizing protection and control systems in existing substations.
- Where the combination of digital multifunction relays and test paddles and/or drawout construction are mandated.
- In applications where bus protection is provided by a high speed bus overcurrent blocking scheme instead of a dedicated bus differential circuit.
- Where the capabilities of intelligent electronic devices (IEDs) are used to decrease relay and breaker maintenance costs.

Features

PROTECTION

- Sensing Input Type G
 - Three Phase and four Neutral Instantaneous Overcurrent elements with settable time delay
 - One Phase and two Neutral Time Overcurrent elements
- Sensing Input Type H
 - Two each Phase, Neutral, and Negative Sequence Instantaneous Overcurrent elements with settable time delay
 - One each Phase, Neutral, and Negative Sequence Time Overcurrent element
- All U.S. and IEC timing curves plus user-programmable curve
- Responds to either Average AC, Fundamental, or Wide band RMS to 7th harmonic
- Minimizes transient overreach and overtravel on overcurrent elements
- Separate ground current input
- Breaker Failure protection function
- Two general purpose logic timers
- Four protection settings groups with external or automatic (cold load pickup, load unbalance, recloser shot) selection modes

CONTROL

- Four shot recloser with zone sequence coordination and sequence controlled protective element blocking functions
- One virtual breaker control switch and four virtual selector switches controllable from both HMI and communication ports

INSTRUMENTATION

- Real time phase, neutral, and negative sequence currents
- 1% meter accuracy down to 10% of nominal current

REPORTS

- Demand reporting
- Breaker operations counter and contact wear duty
- 255 event sequence of events report with I/O and alarm subreports
- Fault summary reports; two most recent
- Fault summary records saved to nonvolatile memory
- Sixteen fault records, 15 cycles long @ 24 samples/cycle
- COMTRADE format

SELF TEST AND ALARM FUNCTIONS

- Relay Fail, major alarm, minor alarm LEDs, and fail-safe alarm output contact
- Extensive internal diagnostics monitor all internal functions of the relay.



BE1-951

(Request bulletin UHR)

Functional Description

The BE1-951 Overcurrent Protection System is an economical, microprocessor based, multifunction system. Using Basler Electric's innovative half-rack, drawout design, systems can be dovetailed to form a standard 19" rack mount installation with no special mounting hardware. Using adapter plates, the S1 style fits cutout, drilling, and behind-panel projection dimensions for common Basler Electric, GE, and Westinghouse unit case relays. This protection system provides:

- Three phase, ground, and negative sequence overcurrent protection with four shot recloser
- Twelve samples per cycle digital signal processing with frequency compensation
- Auto configuring voltage sensing circuits
- Breaker failure
- Breaker monitoring, metering, and control functions
- Frequency tracking and voltage restrained overcurrent
- Over/underfrequency and voltage

Application

The BE1-951 Overcurrent Protection System is intended for use in any directional or nondirectional overcurrent protection application. Its unique capabilities make it ideally suited for applications:

- Requiring low burden to extend the linear range of CTs.
- Requiring high accuracy across a wide frequency range such as motor, generator, and generator step-up transformer protection or in cogeneration facilities.
- Requiring the flexibility provided by wide setting ranges, multiple setting groups, and multiple coordination curves in one unit.
- Requiring the economy and space savings provided by a multifunction, multiphase unit, while providing all of the protection, local and remote indication, metering, and control functions required on a typical circuit.
- Requiring directional control and fault locating.
- Where overexcitation protection is required, such as transformer backup applications.
- Requiring communications and protocol support.
- Where the capabilities of digital multifunction relays with drawout construction are desirable.

Features

PROTECTION

- Two each Phase, Neutral, and Negative Sequence Instantaneous Overcurrent elements with settable time delay
- One Phase, Two Neutral, and One Negative Sequence Time Overcurrent elements
- Neutral Overcurrent elements can be assigned to calculate residual or optional independent ground input
- Phase Overcurrent element has capability of voltage restraint or control
- Breaker Failure protection function
- Under and overvoltage protection
- Negative sequence overvoltage protection
- Four protection settings groups
- Fuse loss protection

CONTROL

- Four shot automatic recloser
- One virtual breaker control switch and four virtual selector switches—controllable from both HMI and communication ports

INSTRUMENTATION

- Real time three phase watts, vars, and power factor
- Real time frequency, current, and voltage
- Real time ground current for optional independent ground input
- Watt hour and Var hour

REPORTS

- Demand reporting
- Breaker operations counter and contact wear duty
- 255 event sequence of events report
- Fault and oscillography records: Settable 6-16
- 240 cycles oscillography memory @ 12 samples/cycle

SELF TEST AND ALARM FUNCTIONS

- Relay Fail, major alarm, minor alarm LEDs, and fail-safe alarm output contact
- Extensive internal diagnostics monitor all internal functions of the relay.
- More than 20 additional alarm points—programmable for major or minor priority provided by virtual control and selector switches with select-before-operate logic through programmable outputs

- Where bus protection is provided by a high speed overcurrent blocking scheme on the transformer bus mains instead of a dedicated bus differential circuit.
- Where space constraints dictate protection systems with small size and minimal behind-panel projection for substation modernization projects.



BE1-CDS220

(Request bulletin UHP)

Functional Description

The BE1-CDS220 Current Differential System is an economical, microprocessor based, multifunction system. It is fully drawout and fits cutout, drilling, and behind-panel projection dimensions for common Basler, GE, and Westinghouse differential relays. It provides:

- Two input, three phase percentage differential with harmonic restraint
- Metering functions in an integrated system with communications
- Three phase, ground, and negative sequence overcurrent protection with control
- Transformer monitoring
- Breaker monitoring
- Frequency compensation
- Breaker failure protection
- Phase shift and tap compensation

Application

This powerful protection system provides percentage restrained differential protection along with multiple overcurrent elements. It is intended for use in any low impedance current differential protection application including transformer, generator, motor, and bus protection. Its unique capabilities make it ideally suited for applications:

- Requiring low burden to extend the linear range of CTs.
- Where dedicated CTs for the differential are not available.
- Requiring high accuracy across a wide frequency range such as for motor, generator, and generator step-up transformer protection or in cogeneration facilities.
- Requiring the flexibility provided by wide settings ranges, multiple settings groups, and multiple coordination curves in one unit.
- Requiring the economy and space savings provided by a multifunction, multiphase unit that provides all the protection, along with local and remote indication, metering, and control required on typical circuits.
- Requiring harmonic restraint.
- Requiring communication capability and protocol support.
- Where optional case configurations facilitate protection and control system modernization projects.
- Where the capabilities of a digital multifunction relay with drawout construction are required.

Features

PROTECTION

- Percentage Restrained Current Differential with harmonic restraint
- Optional Restricted Ground Fault
- Three each Phase, Neutral, and Negative Sequence Instantaneous Overcurrent elements with settable time delay
- Three each Phase, Neutral, Ground, and Negative Sequence Time Overcurrent elements
- All U.S. and IEC timing curves plus user-programmable curve
- Breaker Failure protection function
- Two general purpose logic timers
- Four protection settings groups with external or automatic selection modes

CONTROL

- One Virtual Breaker Control Switch and eight virtual selector switches—controllable from both HMI and communication ports

INSTRUMENTATION

- Real time phase, neutral, and negative sequence currents for each 3 phase CT input circuit
- Real time ground current for optional independent ground input
- Real time tap and phase compensated restraint and operate currents for each differential element
- 1% meter accuracy down to 10% of nominal current

REPORTS

- Current Demands for phase, neutral, and negative sequence for designated CT
- Optional 4000-point log of demand reading
- Breaker operations counter and contact wear duty
- Transformer through-fault duty statistics

FAULT RECORDING

- 255 event sequence of events report
- Fault summary reports; two most recent Fault Summary Records saved to nonvolatile memory
- 240 cycles oscillography memory @ 24 samples/cycle
- SER and Fault reporting doubled with Load Profile option is selected

SELF TEST AND ALARM FUNCTIONS

- Relay Fail, major alarm, minor alarm LEDs, and fail-safe alarm output contact
- Extensive internal diagnostics monitor all internal functions of the relay.
- More than 20 additional alarm points—programmable for major or minor priority



BE1-GPS100

(Request bulletin UHQ)

Functional Description

The BE1-GPS100 Generator Protection System is an economical, microprocessor based, multifunction system that provides a comprehensive mix of protective functions to detect generator faults and abnormal operating conditions along with control and metering functions in an integrated system. Two Basler Electric half-rack units can be dovetailed together to mount in a standard 19" equipment rack with no special mounting hardware. The innovative half-rack case is fully drawout with current circuit shorting provisions. The system includes:

- Fuse loss detection
- Three phase, ground, and negative sequence overcurrent protection
- Forward and reverse power protection
- Sync check protection
- Breaker failure protection
- Voltage protection
- Loss of excitation protection
- Frequency protection
- Volts per hertz protection

Application

The BE1-GPS100 Generator Protection System can be applied in any generator protection application. Its unique capabilities make it ideally suited for applications:

- Requiring the flexibility provided by wide settings ranges, multiple settings groups, multiple coordination curves, and an extremely versatile programmable logic, in one unit.
- Requiring the economy and space savings provided by a multifunction unit that can provide all of the protection, control, metering, and local and remote indication functions required in many typical units.
- Where space constraints dictate protection systems with small size and minimal behind-panel projection for substation modernization projects.
- Where protection redundancy is provided by having differential relaying in an independent protective relaying package.
- Requiring communications and protocol support.
- Where drawout construction is desirable.
- Requiring high accuracy across a wide frequency range.

Features

PROTECTION

- One each Phase and Neutral Instantaneous Overcurrent elements with settable time delay
- One Phase, Two Neutral, and One Negative Sequence Time Overcurrent elements
- Phase Overcurrent element with voltage restraint or voltage control capability
- Internally calculated phase residual, 3I0, available on all relays. Optional independent ground input available.
- One Instantaneous Neutral Overcurrent and two Time Overcurrent elements monitor either ground or calculated residual
- Negative sequence overcurrent element with timing algorithm based on generator K factors or standard TOC curves
- All U.S. and IEC timing curves plus user-programmable curve
- Two each Phase Undervoltage and Overvoltage elements
- Two each auxiliary Undervoltage and Overvoltage elements
- Negative Sequence Overvoltage element
- Four Under/Overfrequency elements
- Two Forward/Reverse Power elements
- Two Loss of Excitation elements
- Four general purpose logic timers
- Two controllable protection settings groups
- Settings group selection may control tripping logic.
- Automatically configurable internal VT circuits

CONTROL

- One virtual breaker control switch and four virtual selector switches—controllable from both HMI and communication ports

INSTRUMENTATION

- Real time three phase watts, vars, and power factor
- Real time frequency, current, and voltage
- Real time ground current for optional independent ground input
- Watt hour and Var hour

REPORTS

- Demand reporting
- 255 event sequence of events report
- Fault reporting: Fault Summary reports, oscillographic records

SELF TEST AND ALARM FUNCTIONS

- Relay Fail, major alarm, minor alarm LEDs, and fail-safe alarm output contact
- Extensive internal diagnostics monitor all internal functions of the relay.
- More than 20 additional alarm points—programmable for major or minor priority

1 BE1 NUMERICAL SYSTEMS



BE1-MMS100

(Request bulletin LAD)

Functional Description

The BE1-MMS100 is an economical, microprocessor based, multifunction revenue-accurate power metering system that provides a comprehensive mix of metering functions. This unique package allows for two Basler Electric half-rack units to be dovetailed together to mount in a standard 19" equipment rack with no special hardware. This innovative half-rack case is fully drawout with current circuit shorting provisions.

- Measurement of paired voltage and current signals
- Accuracy is better than 0.2% of reading
- Measurement of power system harmonics to 31st
- Forward and reverse power
- Min and Max energy values
- Optional oscillographic record of events
- Optional storage of 36 days of 15 minute average data
- Four discrete inputs for monitoring status of input contacts from breakers, targets, switches, or monitoring pulses from utility pulse initiators
- Six Form A output contacts
- Control outputs through built-in interposing relays
- Keypad and LCD display

Application

The BE1-MMS100 is ideal for utility, industrial, commercial, and institutional use for feeder monitoring and automation, tenant sub-billing, budgetary cost allocation and outage detection. Its unique capabilities make it ideally suited for the following applications:

- Utility sub-metering
- Commercial/Industrial Metering
- Substation Automation
- Genset Applications

And where the following is required:

- A panel meter to read three phase V, I, Watts, VARs, frequency, Watt-hours or VAR-hours.
- Monitoring of energy utilizing a utility meter's pulse contacts.
- Provisions for output contacts capable of replicating metering pulse contacts.
- Metering data logging and the ability to communicate with a central computer running SCADA software.
- Remote or local interrogation/operation of the metering device.
- High sample oscillographic recording.
- Drawout case construction.

Features

METERING

- True RMS measurements of voltage per phase, current per phase, Watts per phase and total, VARs per phase and total, PF, frequency, and phase angle.
- Energy imported, exported, and total kWh and kVARh, and total kVAh
- Counts pulses from utility pulse initiators
- Measures individual and total harmonic distortion on the voltage inputs up to the 31st harmonic

LOGGING AND RECORDING

- Optional historical data logging of voltage per phase, current per phase, Watts per phase and total, VARs per phase and total, Power Factor, frequency and pulse count every 15 minutes and imported, exported and total kWh and kVARh and total kVAh and total elapsed time since last reset for up to 36 days.
- Optional oscillographic recording of 12 events, 12 cycles each at 64 samples per cycle.
- Min/Max logging of voltage per phase, current per phase, Watts per phase and total, VARs per phase and total, imported, exported, and total kWh and kVARh and total kVAh and total elapsed time since last reset.
- Event logging and alarming with sequence of events time stamped to ± 10 msec accuracy including configuration changes, set point, and min/max events.

CONTROL

- Four non-wetted status inputs and six output relays.

COMMUNICATION

- Two RS-232 and one RS-485 communications ports.
- Supports DNP 3.0, Modbus™, ASCII and Basler TNP protocols.

By using one BE1-MMS100 on each feeder and connecting it to communicate with a central computer running SCADA software such as Basler's UMOS®, the benefit of a complete energy management system can be realized.

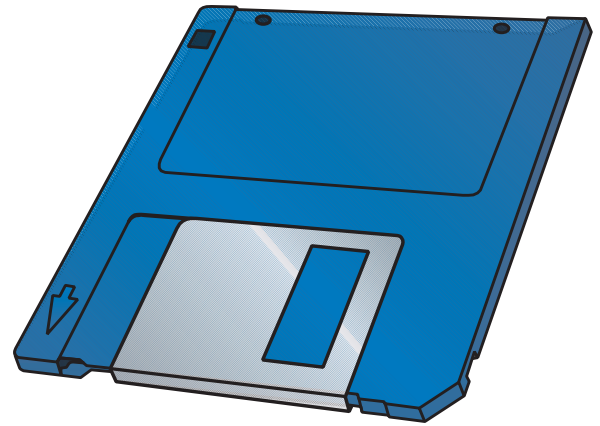
SOFTWARE

Some software is available in 16-bit versions that will run on 16-bit operating systems (Win 3.1) or 32-bit operating systems (Win 95, Win NT, Win 98). Others are available in 32-bit only. Contact Technical Sales Support.

BESTCOMS

The BESTCOMS programs are Graphical User Interface (GUI) programs that provide an intuitive point-and-click environment for creating and viewing settings files for BE1 Numerical Systems IEDs. They allow the user to create and edit settings files and upload them to the relay, as well as to download COMTRADE (Common Format for Transient Data Exchange) oscillography files from the relay to the hard drive for viewing with BESTwave software. With BESTCOMS, you can create settings files in the office without connection to the relay. These settings can be exported from the database to a settings file that can be put on a floppy disk or e-mailed to another BESTCOMS user for setting the relay in the field. This software is available for the following systems:

- BE1-851
- BE1-951
- BE1-GPS100
- BE1-CDS220
- BE1-MMS100
- BE3-GPR



BESTwave

BESTwave software can be used to view any IEEE Std. C37.111 COMTRADE oscillography file. Basler Electric devices with oscillographic recording capability provide their data in this industry-standard file format. BESTwave can open up to four files simultaneously for easy viewing of substation disturbances as recorded by individual relays. This software will also open transient data files in UMOS® (Utilities Management Operating System) format.

BESTload

BESTload software is used to update the embedded firmware in Basler Electric Numerical Systems that use Flash program memory instead of EEPROMs.

BESTview

BESTview software is for use with the BE1-BPR Breaker Protection Relay. This software provides terminal emulation capability for the ASCII Command Interface, plus remote front panel HMI emulation, downloading of COMTRADE oscillography files from the relay to your hard drive, and an IEEE Std. C37.111 COMTRADE oscillography file viewer.

2 NETWORKED AUTOMATION SYSTEMS

UMOS®

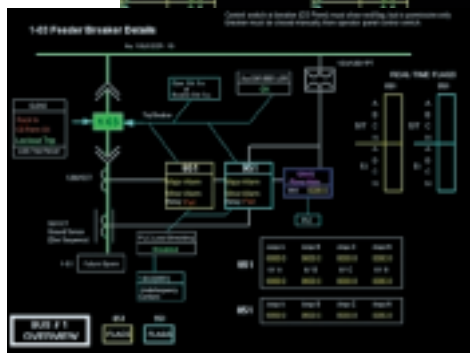
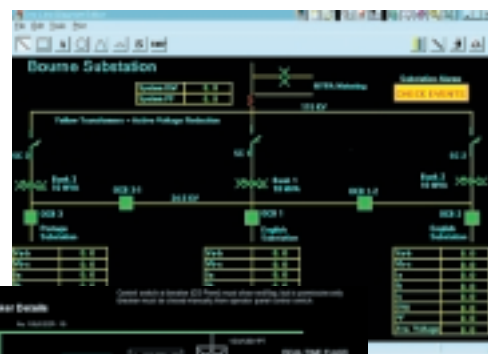
Utilities Management Operating System (Request bulletin LAB)

A graphical, Windows® NT-based operating environment with many applications in electrical power management, water systems, and sewage systems administration. UMOs® can be used to implement master stations for SCADA, Load Management, and Distribution Automation systems. The UMOs® software can also be used to implement smart and flexible PC-based remote terminal units (RTUs) for large scale SCADA systems.

Features:

- Easy to use, easy to install
- Integrates communications for most Intelligent Electronic Devices (IEDs)
- Compatible with a wide range of RTUs and PLCs
- Built-in PLC network communications
- Full-featured, mouse-driven GUI
- Interactive real time monitor and control displays
- On-line graphics editor to create, modify, or delete graphic screen displays
- Built-in remote computer access to all operating features via modem or network
- Database accepts 300 user-defined computed points (algebraic, trigonometric, and/or Boolean)
- Trending: package includes 500 user-defined strip chart recordings, each increment corresponding to user-defined billing interval
- Includes structured database and field device handlers for 60,000 operating points

One Line Diagram Screen



Last Trip Screen

BUSI™

Basler Universal Substation Interface



The Basler Universal Substation Interface (BUSI™) is a hardened PC designed for use in a substation. It combines the functions of an RTU and human-machine interface (HMI) when running the UMOs® software. The BUSI™ will communicate with Intelligent Electronic Devices (IEDs) manufactured by Basler Electric and others and with the Basler line of transducers.

Transducers



Basler Electric supplies a range of network transducers for use with UMOs® systems. These devices provide distributed data acquisition and control using TNP (Transducer Network Protocol) protocol on an RS-485 multidrop data network.

- **Digital Transducers** monitor status points and provide outputs for control of electrical equipment such as transformers and breakers.
- **Analog Transducers** convert the output of transducers that measure electrical, water, steam, or gas flow parameters to numerical information for the UMOs® system.
- **Pulse Transducers** convert the output of pulse initiating revenue meters to numerical information for the UMOs® system.

3 BE1 PROTECTIVE DEVICES

Basler Electric offers an extensive line of discrete solid-state protective devices designed to meet or exceed applicable IEEE and IEC standards. Basler BE1 relays are available in standard semi-flush drawout cases similar in appearance, connections, and mounting to electromechanical devices. Some units are available in standard 19" rack mount configurations. Most models include built-in test plugs or other provisions for testing units in the case. Advanced digital and microprocessor circuits provide precise measurement and timing accuracies. Complete specifications are found in specific product bulletins. For general standards, dimensions, and accessories, refer to Basler product bulletin SDA.

Basler Electric protective relays are:

- **Dependable** – Basler protective relays are designed to provide dependable operation in harsh substation environments. They are qualified by rigorous electrical and physical tests. The wide operating temperature range of -40°C to +70°C is indicative of the high quality level of components used in all BE1 series relays.
- **Secure** – Using signal filtering techniques in all electronic hardware and software programs, Basler protective relays are designed and qualified in the laboratory to make correct decisions while exposed to the harsh environment common in high voltage substations.
- **Flexible** – A variety of standard features and options includes a wide range of sensing inputs, outputs, and functional characteristics. Coupled with low burden designs, these options make it possible to tailor the products to your needs.
- **Adjustable** – Direct reading switches, digital displays, and precision controls on the front panel provide convenient and understandable adjustments.
- **Available** – Basler protective relays are American-made and are normally available for delivery within three to four weeks from receipt of order.

APPLICATION TABLE

Purpose	Relay Type	Protected Zone					
		Feeders	Transmission	Bus	Transformers	Generators	Motors
Clear Faults	Current	50, 51, 50/51B, 50/51M	67, 67N	50, 51	50, 51	51/27R, 51/27C	51, 50/51, MPS
	Differential			87B	87T	87G	87G
	Breaker Failure	50BF	50BF, BPR				
	Negative Sequence					46N	46N, 47N, MPS
Relieve Stress	Excitation				24	24, 40Q, 60	40Q
	Temperature					MPS	MPS
	Voltage	27/59		59NC		27, 59, 59N	27, 27/59, MPS
Restore Power	Sync	25	25			25, 25A	
	Multiple Shot Reclose	79M, 25/79TR	79M, 25/79TR				
Preserve System	Power	32R				32R, 32O/U	32R, 32O/U
	Frequency	81O/U				81O/U	

3 BE1 PROTECTIVE DEVICES



*BE1-24 Volts Per Hertz Relay,
BE1-25 Sync-Check Relay*

BE1-24 Volts Per Hertz Relay

(Request bulletin UDN)

Application

Provides overexcitation protection for machines, transformers, and reactors.

Features

- Integrating inverse square time delay remembers excursions
- Front panel indication of time accumulated toward trip
- Linear reset models the machine cooling
- Alarm may be set to operate before relay trips
- Instantaneous function
- Pickup and reset functions independently resettable

BE1-25 Sync-Check Relay

(Request bulletin UBP)

Application

Checks for proper phase angle and voltage before closing breaker.

Features

- Direct reading thumbwheel switches for setting phase angle and time delay
- May be set to respond as fast as 1 cycle of 50/60Hz
- Better than one degree accuracy
- Voltage monitoring provides independent check of bus and line conditions
- SCADA control of phase window for emergency closure of critical ties
- External voltage conditions selectivity

BE1-25/79TR Sync-Check Reclosing Relay

(Request bulletin UDW)

Application

Provides voltage monitoring, sync-check, and automatic reclosing for transmission systems, utility interties, and distribution systems with cogeneration. Replaces mechanical repeat cycle schemes, adaptable for almost any scheme.

Features

- Single or two-shot operation
- Rack mount unit with drawout construction (19" x 3.5" x 8.4" deep)
- Program settings through front panel display or via RS-232 or RS-485 communications
- Field configurable through contact inputs
- Delta voltage, phase, and slip frequency monitoring
- Reclose wait function
- Single-phase or three-phase line and bus voltage monitoring
- Variable 52b response selection

BE1-27 Undervoltage Relay

BE1-59 Overvoltage Relay

BE1-27/59 Under/Overvoltage Relay

(Request bulletin UBF)

Application

Provides reliable protection for generators, motors, transformers, and other electrical equipment against adverse system voltage conditions.

Features

- Pickup continuously adjustable over a wide range
 - Independent INST and TIME elements
 - Individually adjustable timing for each time-delayed under/overvoltage
 - Wide voltage adjustment range (1-40V, 55-160V, or 110-320V)
-

BE1-32O/U Directional Over/Underpower Relay and BE1-32R Directional Overpower Relay

(Request bulletin UBU)

Application

The BE1-32O/U Directional Over/Underpower relay and the BE1-32R Directional Overpower relay are solid state devices that protect machines and systems against underpower and overpower, and reverse power flow conditions.

Features

- Senses actual power flow ($EI \cos \theta$)
 - Operating range down to a power factor of 0.1
 - Sensitivity not affected by negative sequence currents
 - Input configurations available for single and multiple phases
 - Sensing ranges cover 0.5W to 6000W secondary
 - Instantaneous, definite, or inverse time characteristics
 - Supplied in S1 or M1 case, depending on options
-

BE1-40Q Loss of Excitation Relay

(Request bulletin UBW)

Application

Protects 50 or 60 Hz synchronous generators against the consequences of loss of field conditions.

Features

- Measures Var flow to sense loss of excitation
 - Trip characteristics are defined on complex plane for ease of application
 - Definite time characteristics
-

BE1-46N Negative Sequence Overcurrent Relay

(Request bulletin UDJ)

Application

Protects machines against excessive heating damage due to prolonged current unbalance.

Features

- Replicates heating characteristics of machines
 - Pickup may be set as low as 1% negative sequence
 - Unaffected by ± 5 Hz frequency changes
 - Output contacts for alarm, trip, and initiating other devices
 - External panel meter to display negative sequence current level
-

BE1-47N Negative Sequence Voltage Relay

(Request bulletin UDK)

Application

Provides protection against reverse phase sequence, unbalance, or open phase.

Features

- Pickup may be set as low as 2% negative sequence
 - Unaffected by ± 5 Hz frequency changes
 - Inverse, definite, and instantaneous timing options
 - Independent overvoltage and undervoltage elements
-

BE1-50 Instantaneous Overcurrent Relay

(Request bulletin UBC)

Application

Provides high speed protection for phase and/or ground faults.

Features

- Setting ranges cover 0.25 to 32 amps
- Single-phase, three-phase, two-phase with neutral, or three-phase with neutral configurations

3 BE1 PROTECTIVE DEVICES



*BE1-50/51M Time Overcurrent Relay,
BE1-50/51B Time Overcurrent Relay,
BE1-67 Phase Directional Time Overcurrent Relay,
BE1-51 Time Overcurrent Relay*

BE1-50BF Breaker Failure Relay

(Request bulletin UBT)

Application

Provides protection and security for the power system against failure of the monitored breaker.

Features

- Cycle control timer sets failure detection window
- Less than 1 millisecond fault detector reset time
- Two independently timed initiation/control inputs
- Field adjustable logic
- Wide operating frequency range
- Three breaker fail outputs plus one instantaneous retrip

BE1-50/51B Time Overcurrent Relay

(Request bulletin UHD)

Application

Self-powered, microprocessor, single-phase time overcurrent relay provides overcurrent protection for phase and ground applications.

Features

- Self-powered from 50/60Hz systems
- Independent instantaneous element 1 or 5 Amp CTs
- Replicates decaying reset of electromechanical relays
- Drawout construction
- Direct reading controls for settings even when the relay is powered down

- Field-selectable curves including ABB/CO, British Standard, and GE IAC (200 Series only), and wide pickup range simplifies specifying and stocking
- A1 or S1 case
- Testable in the case

BE1-50/51M Time Overcurrent Relay

(Request bulletin UHE)

Application

Single-phase self-powered, microprocessor based time overcurrent relay. Provides protection in applications requiring time delayed coordination for phase or ground overcurrent conditions.

Features

- Self-powered from 50/60Hz systems
- Independent instantaneous element 1 or 5 Amp CTs
- Replicates decaying reset of electromechanical relays
- Drawout construction
- Direct reading controls for settings even when the relay is powered down
- Field-selectable curves including ABB/CO, British Standard, and GE IAC (200 Series only)
- Standard magnetically latched targets
- Compact size C1 case (6.88"W x 4.00"H x 7.00"D)
- Continuous automatic calibration
- Available in four-unit vertical rack

BE1-51 Time Overcurrent Relay

(Request bulletin UDA)

Application

Versatile AC/DC powered microprocessor relay provides overcurrent protection for phase and ground applications.

Features

- Single-phase, three-phase, two-phase with neutral, or three-phase with neutral configurations
- Zero, one, or two instantaneous outputs
- Available with voltage control or voltage restraint
- Sixteen field selectable time-current curves
- High dropout ratio

BE1-59N Ground Fault Overvoltage Relay

(Request bulletin UBG)

Application

Provides sensitive ground fault protection for ungrounded or high resistance grounded systems, including stator ground fault protection.

Features

- Overvoltage element tuned to reject harmonics
 - Pickup down to 0.1 volts
 - Withstands full rated voltage continuously
 - Third harmonic undervoltage element for 100% stator protection
 - Instantaneous, definite, or inverse time characteristics
 - Four sensitivity ranges for under and overvoltage
-

BE1-59NC Capacitor Neutral Overvoltage Relay

(Request bulletin UHF)

Application

Provides alarming for minor capacitor bank imbalance and tripping before the imbalance threatens cascading capacitor failures.

Features

- Helps avoid cascading capacitor failures
 - Sensing circuit rejects harmonics and noise to achieve higher sensitivity to 50/60 Hz neutral voltage
 - Includes an early warning alarm output on minor unbalances such as a blown fuse
 - Can be set to trip when voltage across any capacitor exceeds 110% of nominal
-

BE1-60 Voltage Balance Relay

(Request bulletin UBS)

Application

Detects voltage imbalances on relay and control circuits.

Features

- Wide range adjustment (5% to 50%)
 - Six input sensing types to match various system configurations
 - Maximum trip time of 100 milliseconds
-

BE1-67 Phase Directional Time Overcurrent Relay

(Request bulletin UDQ)

Application

Microprocessor based phase directional time overcurrent relay used to protect circuits where power can flow in either direction.

Features:

- Single- or three-phase configurations
 - Sensitive down to one volt on polarizing input
 - Twelve field selectable time-current curves
 - Quadrature (90 degree) voltage polarization
 - Directional or non-directional instantaneous elements
 - Limited region provides additional security
-

BE1-67N Ground Directional Overcurrent Relay

(Request bulletin UDR)

Application

Microprocessor directional overcurrent relay senses direction and magnitude of ground faults.

Features

- Twelve field selectable time-current curves
 - Directional and non-directional instantaneous elements
 - Directional element polarized by zero sequence current, zero sequence voltage, or phasor sum of zero sequence quantities
-

3 BE1 PROTECTIVE DEVICES



*BE1-87B Bus Differential Relay,
BE1-BPR Breaker Protection Relay,
BE1-810/U Digital Frequency Relay*

BE1-79M Multiple Shot Reclosing Relay

(Request bulletin UDL)

Application

Provides automatic reclosing of tripped circuit breakers in power transmission and distribution systems.

Features

- Instantaneous and maximum of three time delayed reclosing attempts
- Direct reading thumbwheel switches for setting reclose and reset delays
- Reclosing sequence may be selected via external contacts
- Nonvolatile memory circuits retain operating data
- Individual alarm contacts for lockout, reclose fail, and relay failure
- Instantaneous trip enable output for control of tripping relays
- Output for blocking load tap changer (LTC)
- Reclose wait and special reclose functions
- Pilot reclose

BE1-810/U Digital Frequency Relay

(Request bulletin UBR)

Application

Protects the system during over or underfrequency conditions.

Features:

- Direct frequency trip settings
- Accuracy of ± 0.003 Hz
- Pickup adjustable in increments of 0.01 Hz
- 40 to 70 Hz operating range
- Up to 4 independent over or underfrequency set points
- Undervoltage inhibit

BE1-87B Bus Differential Relay

(Request bulletin UHC)

Application

Provides economical high impedance differential protection in single- or three-phase packages.

Features

- High Impedance Bus Differential
- Power supply fail alarm
- Alarm to alert for excessive steady state imbalance
- Unique shorted CT circuit diagnostic test function

NEW

BE1-87G Variable Percentage Differential Relay

(Request bulletin UBK)

Application

Provides high speed solid-state variable percentage differential protection for generators, motors, and shunt reactors.

Features

- Single-phase and three-phase units
 - Sensitivity is adjustable from 0.1 to 1.6 Amps.
 - Variable percentage restraint characteristic
 - Current balancing reactors help improve CT performance on external faults.
 - High speed (20 milliseconds) operation
-

BE1-87T Transformer Differential Relay

(Request bulletin UHA)

Application

Used for primary protection against internal faults in power transformers.

Features

- Single-phase sensing with up to five single-phase inputs
 - Three-phase sensing with up to three sets of inputs
 - Provides precision ratio matching in 0.1 Amp steps
 - Second and fifth harmonic restraint for overexcitation and inrush security
 - Phase shift compensation eliminates need for delta or auxiliary CTs.
 - Power supply status output
 - Push-to-energize output switches
 - Displays percent I_{op}
-

BE1-BPR Breaker Protection Relay

(Request bulletin UHG)

Application

Intended for use in any three-pole tripping, breaker failure protection application.

Features

- Three-phase and neutral current inputs monitor currents on power system and in protected circuit breaker.
 - 12 sample per cycle digital signal processing measures RMS value of current flowing in circuit breaker.
 - Seven programmable inputs and five programmable outputs with BESTlogic provides complete system configuration flexibility.
 - Unique timer margin diagnostics to monitor critical margins after every operation
 - Available in horizontal 19" rack mount and vertical panel mount case
 - Onboard breaker diagnostics
-

MPS Motor Protection Systems

(Request bulletin UPB for MPS200/210, UPC for MPS100)

Application

Intended for use in any three-phase, induction motor protection application. Provides protection from faults and abnormal operating conditions.

Features

- MPS100 provides complete overcurrent and thermal overload protection for three-phase induction motors.
 - The MPS200 adds three-phase voltage inputs to provide voltage and power protection and metering functions.
 - The MPS210 adds integrated motor control functions.
 - All MPS relays include an integrated LCD display for setup and local indication.
 - The MPS100 is available in a vertical fixed case. The MPS2xx relays are available in either vertical or horizontal fixed cases or a Basler M1 drawout case with test paddle for current and voltage inputs.
-

4 BE3 PROTECTIVE DEVICES



BE3-GPR

(Request bulletin UEG)

Functional Description

The BE3-GPR Generator Protective Relay offers multiple protective features in a single economical package. Its microprocessor-based design provides high accuracy, reliability, and repeatability through exact set point adjustment and precise generator system protection.

- Low sensing burdens mean that the BE3-GPR does not require dedicated VTs and CTs.
- Optional protection features allow for customizing the BE3-GPR to meet individual system requirements.
- One set of three phase current and voltage sensing inputs provides all common protective functions except generator differential, 87G. The voltage sensing circuits may be configured internally for three-phase three wire, three-phase four wire, or single-phase circuits. A fourth voltage input for bus voltage is optional.
- Each protective function is brought out to its isolated Form C output contact.
- The BE3-GPR is extremely easy to set up from the front panel or with an IBM compatible PC.
- The LCD display makes calibration quick, easy, and accurate without the need to bench test the relay to verify settings.
- Mounting configuration choices include semi-flush and behind the panel.

Application

The BE3-GPR Generator Protective Relay meets utility grade specifications and is suitable for any generator application, as well as many utility and cogeneration facility intertie applications. It offers a limited number of precision settings to make setup fast, easy, and accurate.

Features

PROTECTION

Stand-alone Generator Version:

- Under/Overvoltage: 27/59
- Under/Overfrequency: 81O/U
- Underfrequency: 81U
- Neutral Ground Fault: 51N or Three Phase Time Over-current with Voltage Restraint: 51/27R

Paralleled Generator Version:

- Adds Reverse Power (32R)

Optional Protective Functions:

- Sync Check with Dead Bus (25)
- Loss of Excitation (40)
- Phase Balance (47)

PROGRAMMABILITY

- Front panel LCD display and pushbuttons
- Basler BESTCOMS software
- Output contacts can be programmed to energize or de-energize to trip
- Trip, Reset, and Time delays for each function can be programmed

INPUTS

- Available reset input allows relay to automatically reset when fault goes away or to maintain output until an input is received.
- A disable input contact disables the relay to avoid nuisance tripping during generator build-up.

WATCHDOG TIMER

- Monitors microprocessor
- Energizes output relay if problem occurs

COMMUNICATIONS

- Send or receive ASCII characters in serial data format
- Communicate with PC running terminal emulation setup program
- Basler BESTCOMS software is available for enhanced HMI communications and metering of generator parameters.

INDUSTRIAL RELAYS

BE3 Series Monitoring Relays

(Request bulletin ULX)



BE3 relays provide a wide range of functions for industrial applications as listed below.

APPLICATION	DEVICE NUMBER*													
	25	27	32	37	47	47N	49R	49T	51	59	74S	74T	81O	81U
Auto Transfer		X		X	X	X			X	X	X	X	X	X
Distribution		X			X	X			X	X	X	X	X	X
Generators	X	X	X				X	X	X	X	X	X		X
Motors		X		X	X	X	X	X	X	X	X	X		X
Process Control				X				X			X	X		
Transformers		X			X	X	X	X	X	X	X	X		

* IEEE Device Numbers form an integral part of the Basler Electric Model Number.

COMMON FEATURES

- UL listed, CSA certified, CE compliant. Mounting: DIN rail 1.38"x.29" (35mx7.5mm)
- Self powered. Nominal voltage: 120Vac, 240Vac, 380Vac, 480Vac; Current: 5 Amps.
- Cases comply to IEC 529 and UL 94VO; 2.17"or 3.94" x 2.87" x 4.41" (55 or 100 x 73 x 112mm)

MODEL NUMBER	TYPE	PRODUCT BULLETIN
BE3-25	Sync-Check	ULA
BE3-27	Undervoltage	ULB
BE3-27/59	Over/Undervoltage	ULB
BE3-27T	Undervoltage with Time Delay	ULC
BE3-27T/59T	Over/Undervoltage with Time Delay	ULC
BE3-32	Reverse Power	ULD
BE3-37	Undercurrent	ULE
BE3-37/51	Under/Overcurrent	ULE
BE3-47	Phase Sequence	ULF
BE3-47N	Phase Balance	ULG
BE3-47N/27	Phase Balance with Undervoltage	ULG
BE3-49R	Temperature (3 RTD)	ULH
BE3-49R	Temperature (6 RTD)	ULI
BE3-49TH	Thermocouple Overtemperature	ULJ
BE3-49TL	Thermocouple Undertemperature	ULJ
BE3-51	Overcurrent	ULE
BE3-59	Overvoltage	ULB
BE3-59T	Overvoltage with Time Delay	ULC
BE3-74SD	Millivolt Under/Overvoltage	ULN
BE3-74SH	Millivolt Overvoltage	ULN
BE3-74SL	Millivolt Undervoltage	ULN
BE3-74TD	Milliamp Under/Overcurrent	ULO
BE3-74TH	Milliamp Overcurrent	ULO
BE3-74TL	Milliamp Undercurrent	ULO
BE3-74VD	DC Under/Overvoltage	ULP
BE3-74VH	DC Overvoltage	ULP
BE3-74VL	DC Undervoltage	ULP
BE3-81O	Overfrequency	ULL
BE3-81O/U	Over/Underfrequency	ULL
BE3-81U	Underfrequency	ULL
BE3-81OT	Overfrequency with Time Delay	ULM
BE3-81UT	Underfrequency with Time Delay	ULM
BE3-81OT/UT	Over/Underfrequency with Time Delay	ULM

5 RETROFIT RELAYS

DIRECT PANEL INSTALLATION RETROFITS

Basler Electric provides you with the best of both worlds: State-of-the-art, fully numerical, multifunction protection that can help you improve service, reliability, and reduce costs; with packaging options that can save you installation costs for modernizing existing facilities. The fully numerical Basler Electric relays that are featured on these pages are available in configurations that will fit into the panel space and cutout of many of the obsolete relays that they functionally replace. All include fully drawout construction with automatic CT shorting provisions. Several also include traditional test plugs, reducing the need for installing external test switches.

BE1-851 Overcurrent Protection System

(see page 2 for product description)

- Available in half-rack, S1 and F1 cases
- S1 fits GE IAC overcurrent relay, F1 case fits Westinghouse CO overcurrent relay (FT11 case).
- The BE1-851 S1 with adapter plate 9108551021 fits GE ACR or NLR reclosing relay (S2 case) and Westinghouse RCL reclosing relay (FT21 case) or Westinghouse MMCO overcurrent relay (FT22 case).
- The BE1-851 S1 with adapter 9108551022 fits Westinghouse RC reclosing relay (FT32 case).



BE1-951 Overcurrent Protection System

(see page 3 for product description)

- Available in half-rack and S1 cases
- S1 fits GE IAC overcurrent relay.
- The BE1-951 S1 with adapter plate 9108551021 fits GE ACR or NLR reclosing relay (S2 case) and Westinghouse MMCO overcurrent relay (FT22 case).
- The BE1-951 S1 with adapter 9108551022 fits Westinghouse RC reclosing relay (FT32 case).



DIRECT PANEL INSTALLATION RETROFITS

BE1-CDS

Current Differential Relay

(see page 4 for product description)

- Replaces transformer, generator, motor and bus differential relays
- Direct mounting holes for GE-M1 and -M2, ABB-FT-31 and FT-32 and Basler M1 cases
- Retrofits GE-BDD and STD differential relay (GE M1 or M2 case), Westinghouse HU differential relay (FT31 case) and Basler BE1-87T Transformer Differential relay (Basler M1 case) panel cut-outs



BE1-BPR

Breaker Protection Relay

(see page 15 for product description)

- Vertical unit to replace obsolete breaker fail and fault detector relays
 - Westinghouse SBF-1 breaker failure relay (FT32 case)
 - CHC fault detector relay (GE M2 case)
 - SBC breaker failure relay (GE M2 case)



5 RETROFIT RELAYS

DIRECT PLUG AND PLAY

Basler Electric also provides relays that allow you to enjoy the advantages of modern solid state protective relays without having to modify the installation. We offer true "plug and play" convenience with utility grade, solid state, microprocessor-based replacements for three of the most prevalent relays on your system. By "true plug and play", we mean replacement in the existing cases with no rewiring and no case modifications. This means you can be back in service with minimal downtime, minimal work, and minimal expense.

BE1-79A Multiple Shot Reclosing Relay

(Request bulletin UHN)

- Direct replacement for most ACR reclosing relay configurations
- Installs in existing case with no wiring or panel modifications
- Functionality of ACR is duplicated via cradle mount switches or front panel RS-232 communications port.
- Also available in Basler S1 case for new installations



BE1-50/51B-214 and BE1-50/51B-219 Single Phase Overcurrent Relay Replacements

(Request bulletin UHDS)

- Direct replacement for most IAC relays
- -214 replaces more than 100 IAC models
- Direct replacement for CO relays
- -219 replaces 40 CO models
- Installs in existing case with no wiring or panel modifications
- Self powered and includes memory to replicate the reset of E/M disks
- Self-calibrating eliminates need for recalibration, reducing maintenance.
- 10 selectable curves and wide pickup ranges reduce inventory.
- All units equipped with instantaneous element



BE1-25A Automatic Synchronizer

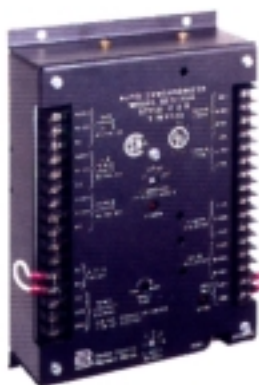
(Request bulletin UIM)

Application

A microprocessor based system including features to bring any generator on line in a minimum time, from small diesel units to large, difficult hydro plants. Configurable for simple manual control systems or complete automatic control of generators.

Features

- Multiple breaker with six programmable closing times for up to six generators
- Plug-in modules for:
 - Voltage acceptance
 - Voltage matching
 - Frequency matching
 - Dead bus closing
- Voltage adjustment function has three options for coordination with regulating system.
- Frequency adjustment function may be either continuous or pulsed to provide optimum performance of the governor system.
- Real time adaptive speed control with smart target pulse
- For use with standard motor operated controls or digital adjuster
- Anticipatory close signal provides smooth synchronizing with minimum system impact.



BE3-25A Single Phase Auto-Synchronizer

(Request bulletin UMP)

Application

Monitors oncoming generator and bus voltages and permits synchronizing the generator to an energized station bus or another generator.

Features

- Generator frequency, phase angle, and voltage matching through either bipolar corrective signals or raise/lower corrective output contacts
- Frequency matching capture range is ± 3 Hz of the bus frequency.
- Dead-bus closing option
- Automatic or remote reset of corrective signals
- Bipolar correction signal provides direct control of Basler Electric voltage regulator.
- Built-in operational test
- Mechanically rugged and compact with high reliability

Mounting Accessories

- A rack mounting plate is available to vertically mount four BE1-50/51M units in a standard 19" rack. Order P/N 9252012001.
- Adapter plate to mount single S1 case in GE 52 or Westinghouse FT-21 cutout. Order P/N 9108551021.
- Adapter plate to mount single S1 case in Westinghouse FT-32 cutout. Order P/N 9108551022.
- Adapter bracket to mount single H1 case in 19" rack. Order P/N 9289924100.
- Escutcheon plate to panel mount two dovetailed H1 relays. Order P/N 9289900016.
- Escutcheon plate to panel mount one H1 relay. Order P/N 9289900017.
- Escutcheon plate to panel mount one horizontal BE1-BPR relay. Order P/N 9272013101.

ESD201/ESD202

(Request bulletin UJO)

Application

Energy storage devices can be used when a station battery source is not available for circuit breaker tripping.

Features

- ESD201 converts ac input into dc and stores sufficient energy to trip the circuit breaker for up to 72 hours after ac is removed.
- ESD202 converts ac input and stores sufficient energy to trip the circuit breaker for at least 12 seconds.
- Compact and economical.

Test Accessories

- Test plug for providing quick, easy method of testing drawout case type relays without removing them from the case. Order P/N 10095.
- Test fixture that provides input power and signals for a full functional test. Includes switches to manually activate sensing inputs and indications for trip and close outputs. Order P/N 9231542100.
- Test case for S1 relays. Order P/N 9180400104.
- Test case for M1 relays. Order P/N 9180400105.
- S1 test case for BE1-851 and BE1-951 relays. Order P/N 9180400110.
- BE1-79M test box to facilitate bench testing. Order P/N 9170114100.
- BE1-25/79TR test box to facilitate bench testing. Order P/N 9231542100.
- BE1-BPR test box to facilitate bench testing. Order P/N 9272010100.
- BE1-851, BE1-951, BE1-GPS100 test box to facilitate bench testing. Order P/N 9289922100.
- H1 test case with 1 CT terminal block and 12-position bottom terminal block (BE1-851). Order P/N 9180400106.
- H1 test case with 1 CT terminal block and 18-position bottom terminal block (BE1-GPS100, BE1-MMS100, BE1-951). Order P/N 9180400108.
- F1 test case with 1 CT terminal block (BE1-851). Order P/N 9180400107.
- MX test case with 2 CT terminal blocks (BE1-CDS220). Order P/N 9180400109.

8 FAX SHEET

Please fax this page to +1 618.654.2351.

Please print clearly and provide all information requested below.

Name: _____ Date: _____

Title: _____

Firm: _____

Street: _____

City: _____ State/Province: _____ Zip/Postal Code: _____

Phone: _____ FAX: _____ E-mail: _____

Do you plan to buy or specify protective equipment: ☐ Yes ☐ No

Action: ☐ Immediately ☐ 1-6 months ☐ 6-12 months

Industry Classification:

- | | |
|---|---|
| <input type="checkbox"/> Electric Utility | <input type="checkbox"/> Generator Manufacturer |
| <input type="checkbox"/> Consulting Engineer | <input type="checkbox"/> Contractor |
| <input type="checkbox"/> Government Agency | <input type="checkbox"/> Industrial Firm |
| <input type="checkbox"/> Switchgear Assembler | <input type="checkbox"/> Independent Power Producer |
| <input type="checkbox"/> Gen-set Manufacturer | <input type="checkbox"/> Repair and Service Shop |
| <input type="checkbox"/> Gen-set Assembler | <input type="checkbox"/> Other _____ |

Please send information on the following:

SECTION(s)

SPECIFIC PRODUCT(s)

- | | |
|---|-------|
| <input type="checkbox"/> 1 Numerical | _____ |
| <input type="checkbox"/> 2 Networked Automation | _____ |
| <input type="checkbox"/> 3 BE1 Protective | _____ |
| <input type="checkbox"/> 4 BE3 Protective | _____ |
| <input type="checkbox"/> 5 Retrofits | _____ |
| <input type="checkbox"/> 6 Autosynchronizers | _____ |
| <input type="checkbox"/> 7 Accessories | _____ |
| <input type="checkbox"/> Other | _____ |



Route 143, Box 269 • Highland, IL 62249-0269 USA
Telephone: +1 618.654.2341 • FAX: +1 618.654.2351 • <http://www.basler.com>
From United States and Canada call Basler Info Center +1 800.562.5656

Please fax this page to +1 618.654.2351.

Please print clearly and provide all information requested below.

Name: _____ Date: _____

Title: _____

Firm: _____

Street: _____

City: _____ State/Province: _____ Zip/Postal Code: _____

Phone: _____ FAX: _____ E-mail: _____

Do you plan to buy or specify protective equipment: ☐ Yes ☐ No

Action: ☐ Immediately ☐ 1-6 months ☐ 6-12 months

Industry Classification:

- | | |
|---|---|
| <input type="checkbox"/> Electric Utility | <input type="checkbox"/> Generator Manufacturer |
| <input type="checkbox"/> Consulting Engineer | <input type="checkbox"/> Contractor |
| <input type="checkbox"/> Government Agency | <input type="checkbox"/> Industrial Firm |
| <input type="checkbox"/> Switchgear Assembler | <input type="checkbox"/> Independent Power Producer |
| <input type="checkbox"/> Gen-set Manufacturer | <input type="checkbox"/> Repair and Service Shop |
| <input type="checkbox"/> Gen-set Assembler | <input type="checkbox"/> Other _____ |

Please send information on the following:

SECTION(s)

SPECIFIC PRODUCT(s)

- | | |
|---|-------|
| <input type="checkbox"/> 1 Numerical | _____ |
| <input type="checkbox"/> 2 Networked Automation | _____ |
| <input type="checkbox"/> 3 BE1 Protective | _____ |
| <input type="checkbox"/> 4 BE3 Protective | _____ |
| <input type="checkbox"/> 5 Retrofits | _____ |
| <input type="checkbox"/> 6 Autosynchronizers | _____ |
| <input type="checkbox"/> 7 Accessories | _____ |
| <input type="checkbox"/> Other | _____ |



Route 143, Box 269 • Highland, IL 62249-0269 USA

Telephone: +1 618.654.2341 • FAX: +1 618.654.2351 • <http://www.basler.com>

From United States and Canada call Basler Info Center +1 800.562.5656

HOW TO REACH US



WEB SITE: Visit us at www.basler.com

(Includes list of local sales representatives)

E-MAIL: info@basler.com

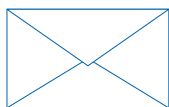


FAX: +1 618.654.2351



TELEPHONE: +1 618.654.2341

Power Systems Group Customer Service



MAIL: Basler Electric Company
Power Systems Group
Box 269, Route 143
Highland, IL USA 62249

European Headquarters:

Basler Electric International, P.A.E. Les Pins, 67319 Wasselonne Cedex FRANCE

Telephone: +33 3.88.87.1010, Fax: +33 3.88.87.0808



Route 143, Box 269 • Highland, IL 62249 U.S.A.
Telephone: +1 618.654.2341 • Fax: +1 618.654.2351 • <http://www.basler.com>